Draft Final
Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan, and Site-Specific Unexploded Ordnance Safety Plan Attachments, Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7)

Fort McClellan
Calhoun County, Alabama

Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645

July 2002

Draft Final
Site-Specific Field Sampling Plan Attachment
Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645

July 2002

Revision 0

Table of Contents

Page

List of Tables iii
List of Figures iii
List of Acronyms iv
Executive Summary ES-1
1.0 Project Description 1-1
1.1 Introduction 1-1
1.2 Site Description 1-1
1.3 Scope of Work 1-3
2.0 Summary of Existing Environmental Studies 2-1
3.0 Site-Specific Data Quality Objectives 3-1
3.1 Overview 3-1
3.2 Data Users and Available Data 3-1
3.3 Conceptual Site Exposure Model 3-2
3.4 Decision-Making Process, Data Uses, and Needs 3-3
3.4.1 Risk Evaluation 3-3
3.4.2 Data Types and Quality 3-4
3.4.3 Precision, Accuracy, and Completeness 3-4
4.0 Field Activities 4-1
4.1 UXO Survey Requirements and Utility Clearances 4-1
4.1.1 Surface UXO Survey 4-1
4.1.2 Downhole UXO Survey 4-1
4.1.3 Utility Clearances 4-1
4.2 Environmental Sampling 4-2
4.2.1 Surface Soil Sampling 4-2
4.2.1.1 Sample Locations and Rationale 4-2
4.2.1.2 Sample Collection 4-2
4.2.2 Subsurface Soil Sampling 4-3
4.2.2.1 Sample Locations and Rationale 4-3
4.2.2.2 Sample Collection 4-3

Table of Contents *(Continued)*

Page

4.2.3 Permanent Monitoring Wells 4-4
4.2.4 Groundwater Sampling 4-5
4.2.4.1 Sample Locations and Rationale 4-5
4.2.4.2 Sample Collection 4-5
4.3 Decontamination Requirements 4-5
4.4 Surveying of Sample Locations 4-6
4.5 Analytical Program 4-6
4.6 Sample Preservation, Packaging, and Shipping 4-7
4.7 Investigation-Derived Waste Management 4-7
4.8 Site-Specific Safety and Health 4-7
5.0 Project Schedule 5-1
6.0 References 6-1
Attachment 1 – List of Abbreviations and Acronyms
Attachment 2 – Memorandum for Release of Property for Pelham Range HTRW Investigations

List of Tables

Number	Title	Follows Page
3-1	Summary of Data Quality Objectives	3-1
4-1	Sampling Locations and Rationale	4-2
4-2	Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities	4-2
4-3	Groundwater Sample Designations and QA/QC Sample Quantities	4-5
4-4	Analytical Samples	4-6

List of Figures

Number	Title	Follows Page
1-1	Site Location Map	1-1
1-2	Site Map	1-1
1-3	Site Map	1-1
1-4	1964 Aerial Photograph	1-2
1-5	1994 Aerial Photograph	1-3
3-1	Human Health Conceptual Site Exposure Model	3-3
4-1	Proposed Sample Location Map	4-2

List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms

Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK05, IT Corporation (IT) will conduct site investigation activities at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), at Fort McClellan, Calhoun County, Alabama, to determine if potential site-specific chemicals are present at this site. The purpose of this site-specific field sampling plan is to provide technical guidance for sampling activities at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7).

The Former Decontamination Training Area is located in Pelham Range, south of the Toxic Gas Area (Training Area 10B) and north of the northern radiological field boundary fence. Reportedly, this training site measuring approximately 75 meters by 50 meters was located just south of the unnamed road south of Rideout Hall. Training in decontamination of chemical agents was conducted by spreading the chemical agents on the ground. Instructors would pour one gallon of the chemical agent mustard (H) onto the ground, and then trainees would decontaminate the area using a supertropical bleach slurry. According to interview notes in the environmental baseline survey, the area where decontamination training occurred may have been two different sites. One site was reported to be located within the Toxic Gas Area, and the other site (Parcel 207[7]) was reported to be located south of the Toxic Gas Area along the northern perimeter of the Rideout radiological field. The time period these areas were used is unknown, but an individual who was involved with training in the area was stationed at Fort McClellan in the 1960s.

Parsons Engineering Science, Inc. (Parsons) conducted a site investigation in 2002 at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7) to determine the presence or absence of chemical warfare material (CWM) that may have resulted from training activities conducted at the site. The site investigation included geophysical surveys for buried objects and analysis of surface and subsurface soil samples for distilled mustard and the chemical agent breakdown products 1,4-dithiane and 1,4-thioxane. Continuous monitoring for CWM was conducted during all intrusive investigation at the site. There was not any CWM related items recovered during the subsurface investigation of anomalies discovered from the geophysical surveys. The results of the soil samples indicated that there were not any concentrations of the CWM in the samples. As a result of this investigation, USACE-Huntsville Center issued a release of Pelham Range for hazardous, toxic and radiological waste (HTRW) investigations.

To conduct the HTRW investigation, IT will collect 5 surface soil samples, 5 subsurface soil samples, and 3 groundwater samples at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7). Potential contaminant sources are primarily unknown but may include metals and decontaminants. Chemical analyses of the samples collected during the field program will include nitroaromatic/nitramine explosives, metals, volatile organic compounds, and semivolatile organic compounds. Results from these analyses will be compared with site-specific screening levels, ecological screening values, and background values to determine if potential site-specific chemicals are present at the site at concentrations that pose an unacceptable risk to human health or the environment.

The presence of unexploded ordnance (UXO) is possible at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), because it is located within Pelham Range, which is an active range. Therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

This site-specific field sampling plan attachment to the installation-wide sampling and analysis plan (SAP) will be used in conjunction with the site-specific safety and health plan, the site-specific UXO safety plan, the installation-wide work plan, and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, monitoring well installation and maintenance plan, ordnance and explosives management plan, and quality assurance plan. Site-specific hazard analyses are included in the site-specific safety and health plan.

1.0 Project Description

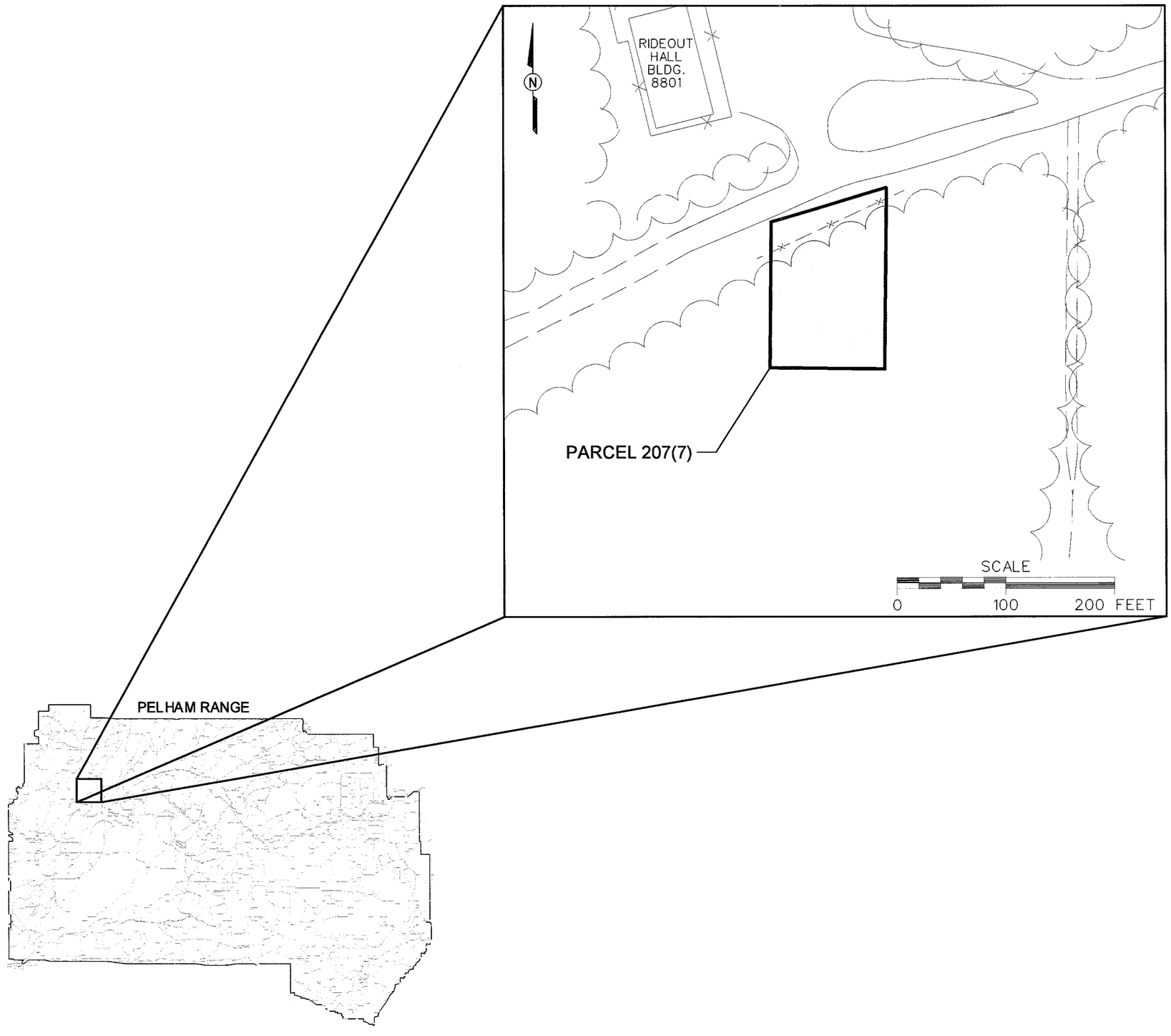
1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), under Task Order CK05, Contract Number DACA21-96-D-0018 (USACE, 2000).

This site-specific field sampling plan (SFSP) is an attachment to the installation-wide sampling and analysis plan (SAP) for FTMC (IT, 2002a) and has been prepared to provide technical guidance for sample collection and analysis for this SI. This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) and site-specific unexploded ordnance (UXO) safety plan developed for the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), and the installation-wide work plan (IT, 2002b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, monitoring well installation and maintenance plan, ordnance and explosives management plan, and quality assurance plan (QAP). Site-specific hazard analyses are included in the SSHP.

1.2 Site Description

The Former Decontamination Training Area South of the Toxic Gas Area is located in Pelham Range (Figure 1-1). The site is south of the Toxic Gas Area (Training Area 10B) and north of the northern radiological field boundary fence (Environmental Science and Engineering, Inc. [ESE], 1998) (Figure 1-2). Reportedly, this training site measuring approximately 75 meters by 50 meters was located just south of the unnamed road south of Rideout Hall (Figure 1-3). Training in decontamination of chemical agents was conducted by instructors spreading one gallon of the chemical agent mustard (H) onto the ground, and then trainees would decontaminate the area using a supertropical bleach slurry. According to interview notes in the environmental baseline survey (EBS), the area where decontamination training occurred may have been two different sites (U.S. Army Center for Health Promotion and Preventive Medicine [CHPPM], 1999). One site was reported to be located within the Toxic Gas Area, and the other site (Parcel 207[7]) was reported to be located south of the Toxic Gas Area along the northern perimeter of the Rideout radiological field. The time period these areas were used is unknown,



LEGEND

- UNIMPROVED ROADS
- PAVED ROADS
- BUILDING
- TREES / TREELINE
- PARCEL BOUNDARY
- FENCE
- FORMER FENCE LINE

FIGURE 1-1
SITE LOCATION MAP
FORMER DECONTAMINATION
TRAINING AREA SOUTH OF THE
TOXIC GAS AREA
PARCEL 207(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRAFT CHCK BY:
ENGR CHCK. BY: S. MORAN
INITIATOR: L. O'HARE
PROJ. MGR: J. YACOUB
DWG. NO.: ...\774645es739
PROJ. NO.: 774645
STARTING DATE: 03/29/01
DRAWN BY: D. 30MAR
DATE LAST REV.:
DRAWN BY:
06/11/02
09:36:50 AM
DBILLING
c:\cadd\design\774645es739

E 605,400

E 609,700

N 1,178,600

N 1,175,600

RJ30

RJ29

RJ28

RANGE K

ORIENTATION AREA

STATION NO.7

CONTROL CENTER AID STATION

STATION NO.1

TOXIC GAS AREA AREA 10B

STATION NO.6 (MINES)

RANGE L (LIMA POND)

STATION NO.2

STATION NO.5 (A-BOMB)

RIDEOUT HALL BUILDING 8801

STATION NO.3 (IMPACT AREA)

FORMER DECONTAMINATION TRAINING AREA SOUTH OF TOXIC GAS AREA, PARCEL 207(7)

LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
- TREES / TREELINE
- FENCE
- FORMER FENCE LINE
- FORMER OBSTACLE COURSE BOUNDARY
- RJ ROAD JUNCTION

SCALE

0 400 800 FEET

SOURCE: U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTATIVE MEDICINE, "PRELIMINARY ASSESSMENT NO. 38-EH-1775-99, FORT McCLELLAN ARMY NATIONAL GUARD TRAINING CENTER, FORT McCLELLAN, ALABAMA MAY 28 - JUNE 17, 1999."

FIGURE 1-2
SITE MAP
FORMER CHEMICAL OBSTACLE COURSE, TOXIC GAS AREA (AREA 10B) AT PELHAM RANGE

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DWG NO: ...\774645es.918 | PROJ. NO.: 774645
INITIATOR: J. BROWN | PROJ. MGR.: J. YACOUB
DRAFT. CHCK. BY: | ENGR. CHCK. BY: S. MORAN
DATE LAST REV.: | DRAWN BY:
STARTING DATE: 10/03/01 | DRAWN BY: D. BOMAR
07/17/02 08:45:13 AM
dbomar c:\cadd\design\774645es.918

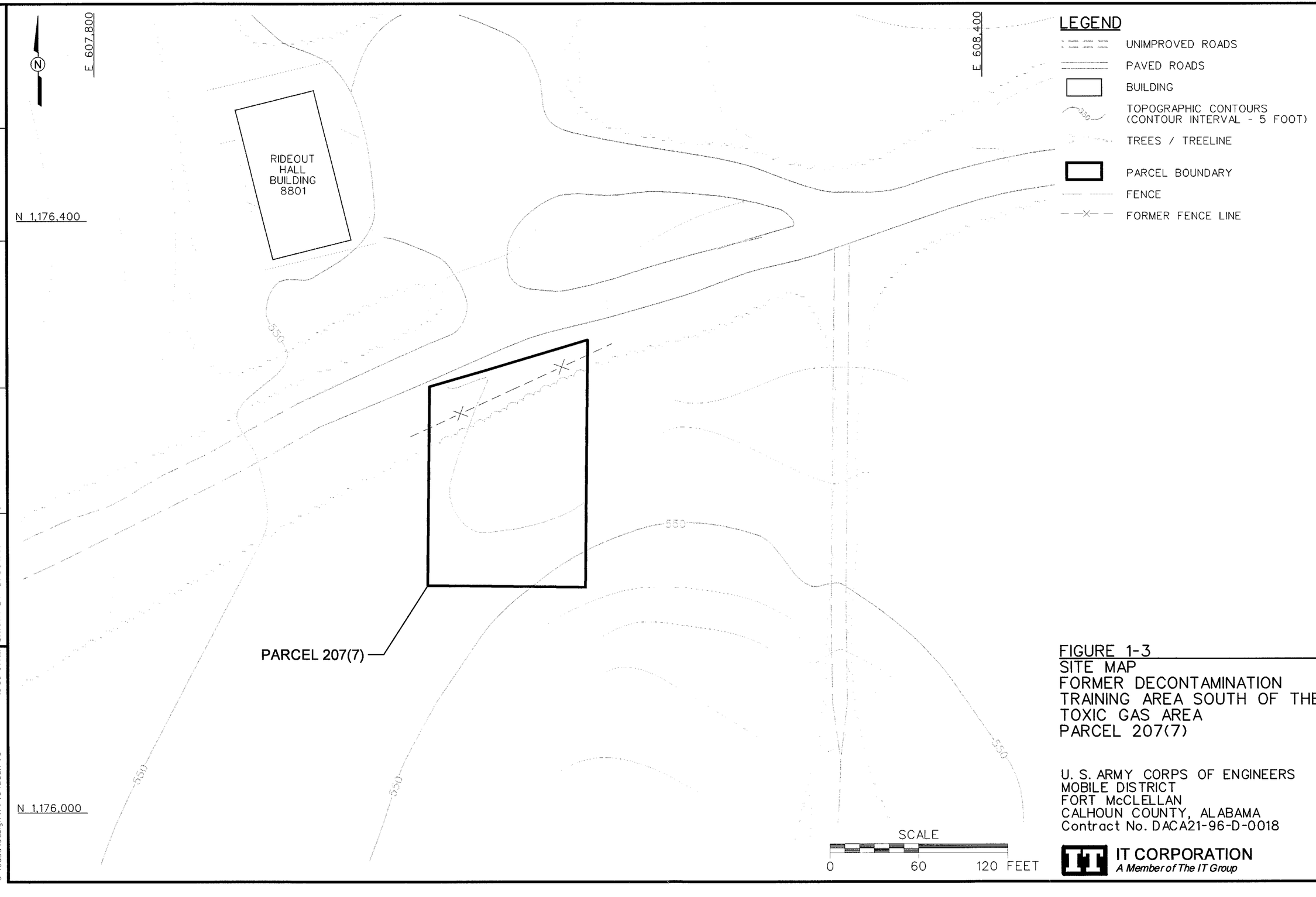


FIGURE 1-3
SITE MAP
FORMER DECONTAMINATION TRAINING AREA SOUTH OF THE TOXIC GAS AREA
PARCEL 207(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRILLING
c:\cadd\design\774645es.740
06/11/02 10:05:01 AM
STARTING DATE: 03/29/01
DRAWN BY: D. BOMAR
DRAFT. CHCK. BY:
ENGR. CHCK. BY: S. MORAN
DATE LAST REV.:
DRAWN BY:
INITIATOR: L. O'HARE
PROJ. MGR.: J. YACOUB
DWG. NO.: ...\774645es.740
PROJ. NO.: 774645

but an individual who was involved with training in the area was stationed at Fort McClellan in the 1960s (CHPPM, 1999).

According to the CHPPM, an interviewee described an end-of-course test for chemical staff specialists near Road Junction 29 (Figure 1-2); however, based on site descriptions and review of Pelham Range maps, the field personnel decontamination station may have been located near Road Junction 28 instead of 29. A half-track truck located near Road Junction 29 was contaminated with H and distilled mustard (HD) and then decontaminated during training activities. Classes were conducted 10 to 12 times a year. The vehicle and the ground were decontaminated with an STB slurry (26 fifty-pound cans of STB mixed with approximately 225 gallons of water). Excess agent was buried and, typically, decontaminants were applied to agent when it was buried. However, it has been reported that not all agent burials included the application of decontaminants (CHPPM, 1999).

Parsons Engineering Science, Inc. (Parsons), conducting a site visit in May 2001 for preparation of a site safety submission, described the area as roughly 100 feet by 150 feet on a hillside that was gently sloping down to the north and covered with trees. Only foxholes and other depressions that resulted from digging were noted at the site (Parsons, 2001).

Aerial Photographs

Available aerial photographs (1944, 1964, 1969, 1976, and 1994) were reviewed for historical land-use activity in the study area. The following is a summary of the review of aerial photographs of the study area. Only figures for the 1964 and 1994 aerial photographs are presented with this review.

1944. In this aerial photograph, little activity appears in the area of the Former Decontamination Area South of the Toxic Gas Area. Rideout Hall, located just north of the site, had not been built at this time. There is not any notable activity in the area of the site.

1964. In this photograph, Rideout Hall is evident to the north of the site. From the well-worn appearance of roads and areas near the site, a large amount of activity is occurring at this time in this area (Figure 1-4). A well-used road is observed in a north-south direction through the center of the site. There appears to be less tree cover and vegetation in the area of the site than previously.

607500 608000 608500

1176500

1176000

This map employs uncontrolled aerial photographs. The resulting distortions affect the spatial accuracy of the photographs.

N:\\projectskeep\projects\ftmc\gisworkarea\jbond\apr\pelham_work_plans.apr\p207_1964

Figure 1-4

1964 Aerial Photograph

Former Decontamination Training Area South of the Toxic Gas Area
Parcel 207(7)
Fort McClellan, AL

Legend

Area of Investigation/ Parcel Boundary

0 100 Feet

NAD83 State Plane Coordinates

N

U.S. Army Corps of Engineers
Mobile District

IT CORPORATION
A Member of The IT Group

Contract No. DACA21-96-D-0018

1969. In this aerial photograph, activity in the area appears to have diminished somewhat, with some of the improved roads abandoned and some vegetation succession in the surrounding cleared areas. There appears to be more tree cover and vegetation succession in the area of the site as well.

1976. This aerial photograph appears similar to the 1969 photograph, but with some increased tree canopy and vegetation succession in the area of the site.

1994. This photograph shows continued tree and vegetation succession in the area of the site; however, main roads in the area appear to be well used (Figure 1-5).

Soil Types. Soils at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), consist of the mapping unit Rarden gravelly loam, shallow, 6 to 10 percent slopes, eroded (RaC2) (U.S. Department of Agriculture [USDA], 1961).

The Rarden series soils consist of moderately well-drained, strongly acid to very strongly acid soils. Generally occurring in large areas on wide shale ridges having slopes of 2 to 10 percent, these soils have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish red clay or silty clay mottled with strong brown color. Concretions and fragments of sandstone up to one-half-inch diameter are common on the surface and in the soil; the surface of some areas has sandstone gravel 3 inches in diameter (USDA, 1961).

Soils of this mapping unit (Rarden gravelly loam, shallow, 6 to 10 percent slopes, eroded [RaC2]) consist of gravelly, coarse-textured surface soil with a somewhat high rate of infiltration. Sandstone, quartz, and/or chert gravel, up to 3 inches in diameter, is on and in the soil. A few places have been slightly to severely eroded. Shallow gullies are common. The depth to bedrock is usually 1.5 to 4 feet below ground surface (bgs). The depth to the water table is typically greater than 20 feet bgs.

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), as specified by the statement of work (USACE, 2000), includes the following tasks:

607500 608000 608500

1176500

1176000

This map employs uncontrolled aerial photographs. The resulting distortions affect the spatial accuracy of the photographs.

N:\projectskeep\projects\fmc\gisworkarea\jbond\apr\pelham_work_plans.apr\c207_1994

607500 608000 608500

Figure 1-5

1994 Aerial Photograph

Former Decontamination Training Area South of the Toxic Gas Area
Parcel 207(7)
Fort McClellan, AL

Legend

Area of Investigation/ Parcel Boundary

0 100 Feet

NAD83 State Plane Coordinates

N

U.S. Army Corps of Engineers
Mobile District

IT CORPORATION
A Member of The IT Group

Contract No. DACA21-96-D-0018

- Develop the SFSP attachment.

- Develop the SSHP attachment.

- Develop the UXO safety plan attachment.

- Conduct a surface and near-surface UXO survey over all areas to be included in the sampling effort.

- Provide downhole UXO support for all intrusive drilling to determine buried downhole hazards.

- Collect 5 surface soil samples, 5 subsurface soil samples, and 3 groundwater samples to determine whether potential site-specific chemicals (PSSC) are present and to provide data useful for supporting any future planned corrective measures and closure activities.

- Analyze samples for the parameters listed in Section 4.5.

The presence of UXO is possible at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), because it is located within Pelham Range, which is an active range. Therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance. The site-specific UXO safety plan attachment addresses the manner in which the avoidance will be conducted.

At completion of the field activities and sample analyses, an SI summary report will be prepared to evaluate the absence or presence of PSSCs at this site and to recommend further actions, if appropriate. The SI summary report will be prepared in accordance with current guidelines of the U.S. Environmental Protection Agency (EPA) Region 4, and the Alabama Department of Environmental Management (ADEM).

2.0 Summary of Existing Environmental Studies

ESE conducted the EBS in 1998 to document current environmental conditions of all FTMC property. The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense guidance for fast-track cleanup at closing installations. The EBS includes a baseline picture of FTMC properties by identifying and categorizing the properties by the following seven criteria:

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)

2. Areas where only release or disposal of petroleum products has occurred

3. Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response

4. Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken

5. Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken

6. Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented

7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) protocols (CERFA-Public Law 102-426) and U.S. Department of Defense policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historical maps and aerial photographs were reviewed to document historical land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

Parsons conducted a SI for chemical warfare material (CWM) at three sites at Pelham Range including the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7) (Parsons, 2002). The purpose of the SI was only to determine the presence or absence of CWM that may have resulted from training activities conducted at Pelham Range at each of the three sites.

Parsons began the investigation at the Former Decontamination Training Area South of the Toxic Gas Area by conducting a geophysical survey to detect ferrous and non-ferrous metal objects at the site. Survey data was collected in a survey grid along north-south oriented parallel lines spaced three feet apart with a high sensitivity EM61 time-domain metal detector and along north-south oriented parallel lines spaced two and one half feet apart with a cesium vapor G-858 magnetometer. Seven subsurface anomalies were identified in the geophysical survey data and selected for intrusive investigation. The recovered items consisted of one ordnance fragment, multiple pieces of barbed wire, communications wire, a fence post and a 14-inch rod. There were not any CWM related items recovered during the subsurface investigation of the seven anomalies (Parsons, 2002).

Twenty-four soil samples were collected from the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), from 12 boring to determine if CWM or chemical agent breakdown products were presence in the soil. Two samples were collected from each boring. One soil sample was collected at a depth of 0 to 0.5 feet below ground surface (bgs) and the second soil sample was collected from 1 to 2 feet bgs. The samples were initially submitted for onsite headspace analysis for HD. After the headspace analysis was completed the samples were shipped for laboratory analysis for HD and the chemical agent breakdown products 1,4-dithiane and 1,4-thioxane. The results from the 24 soils samples indicted that there were not any concentrations of CWM in the samples (Parsons, 2002).

Site monitoring for CWM was conducted using miniature continuous air monitoring system (MINICAMS) during the intrusive investigation activities and there were not any concentrations of CWM detected during the investigation by the MINICAMS. Sixteen depot area air monitoring system (DAAMS) tubes were collected from monitoring stations at the site. The DAAMS tubes were analyzed on site. There were not any concentrations of HD detected in the tubes (Parsons, 2002).

As a result of this CWM investigation by Parsons, USACE-Huntsville Center issued a release of Pelham Range for hazardous, toxic and radiological waste investigations in June 2002 (Attachment 2).

Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), is identified as a Category 7 CERFA site. This CERFA site is a parcel where PSSCs were stored, possibly released onto the site or to the environment, and/or were disposed of on site property. The Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7). This section incorporates the components of the DQO process described in the EPA publication 600/R-96/005, *Guidance for the Data Quality Objectives Process* (EPA, 2000). The DQO process as applied to Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), is described in more detail in Section 3.4 of this SFSP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples and the procedures necessary to meet the objectives of the SI and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Chapter 5.0 of the QAP. Data will be reported in accordance with definitive data requirements of Chapter 2 of the USACE Engineering Manual 200-1-6, *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects* (USACE, 1997), and evaluated by the stipulated requirements for the generation of definitive data (Section 7.2.2 of the QAP). Chemical data will be reported by the laboratory via hard-copy data packages using Contract Laboratory Program-like forms, along with electronic copies. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The available data related to the SI at Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and other USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and

Table 3-1

Summary of Data Quality Objectives
Former Decontamination Training Area South of Toxic Gas Area, Parcel 207(7)
Site Investigation
Fort McClellan, Calhoun County, Alabama

Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM, USACE, DOD, FTMC, IT Corporation Other contractors, and possible future land users	None	Contaminant Source Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7) Migration Pathways Rain runoff and erosion to surface soil, infiltration and leaching to subsurface soil and groundwater, biotransfer to venison, dust emissions and volatilization to ambient air, groundwater discharge to surface water, and runoff and erosion to surface water and sediment Potential Receptors Residents (future), Recreational site user (current and future) National Guardsperson (future) PSSC metals, nitroaromatic/nitramine explosives, VOCs, SVOCs	Surface soil Subsurface Soil Groundwater	SI to confirm the presence or absence of contamination in the site media Definitive quality data for future decision-making	Surface soil TAL Metals, Nitroaromatic and Nitramine Explosives, TCL VOCs, TCL SVOCs	Definitive data in data packages (as defined in USACE EM200-1-6)	5 surface soil samples + QC
					Subsurface Soil TAL Metals, Nitroaromatic and Nitramine Explosives, TCL VOCs, TCL SVOCs	Definitive data in data packages (as defined in USACE EM200-1-6)	5 subsurface soil samples + QC
					Groundwater TAL Metals, Nitroaromatic and Nitramine Explosives, TCL VOCs, TCL SVOCs	Definitive data in data packages (as defined in USACE EM200-1-6)	3 groundwater samples + QC

ADEM - Alabama Department of Environmental Management.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
FTMC - Fort McClellan.
USACE - U.S. Army Corps of Engineers.
SI - Site investigation.
QC - Quality control.
TCL - Target compound list.
TAL - Target analyte list.
TOC - Total organic carbon.
PSSC - Potential site-specific chemical.
VOC - Volatile Organic Compounds.
SVOC - Semi-volatile Organic Compounds.
EM200-1-6 - USACE Engineering Manual, Chemical Quality Assurance for HTRW Projects, October 10, 1997.

information required to confirm or rule out the existence of residual chemical contamination in site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in the risk assessment. The CSEM includes all receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates consistent and comprehensive evaluation of risk to human health through graphically presenting all possible exposure pathways, including all sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Primary contaminant release mechanisms were associated with training exercises (e.g., placing contaminants on the ground during training exercises) and possibly through burials, leaks, and spills. Potential contaminant transport pathways include rain runoff and erosion to surface soil, infiltration and leaching to subsurface soil and groundwater, dust emissions and volatilization to ambient air, and biotransfer to deer through browsing.

Most of the area within the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), is covered with trees and is currently not used by Base personnel. However, because the site is not fenced and is wooded, it is accessible to potential trespassers and may be used for hunting purposes. Therefore, the most likely receptor evaluated under the current land-use scenario is the recreational site user who hunts. Also, because the site is within Pelham Range, which is an active range, the National Guardsperson scenario is possible as a receptor. Fish ingestion will not be evaluated because the surface water is insufficient to support fish for consumption. Potential receptor scenarios considered, but not included under current land-use scenarios, are as follows:

- ***Groundskeeper***. The site is not currently maintained by a groundskeeper.

- ***Construction Worker***. The site is unused, and no development or construction is occurring.

- ***Resident***. The site is not currently used for residential purposes.

Future land use for Parcel 207(7) and the surrounding area will be for military training. Potential receptor scenarios evaluated for the future include the following:

- ***Recreational Site User***. Because of the potential for a hunter to trespass, hunting is a viable option. Fish ingestion will not be evaluated because the surface water is insufficient to support fish for consumption.

- ***Resident***. Although the site is not expected to be utilized for residential purposes, the resident is considered in order to provide information for the project manager and regulators.

- ***National Guardsperson.*** Because the future use of the area will be for military training, the National Guardsperson scenario is considered a viable receptor.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptor scenarios and exposure pathways for this site is provided in Table 3-1 and Figure 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

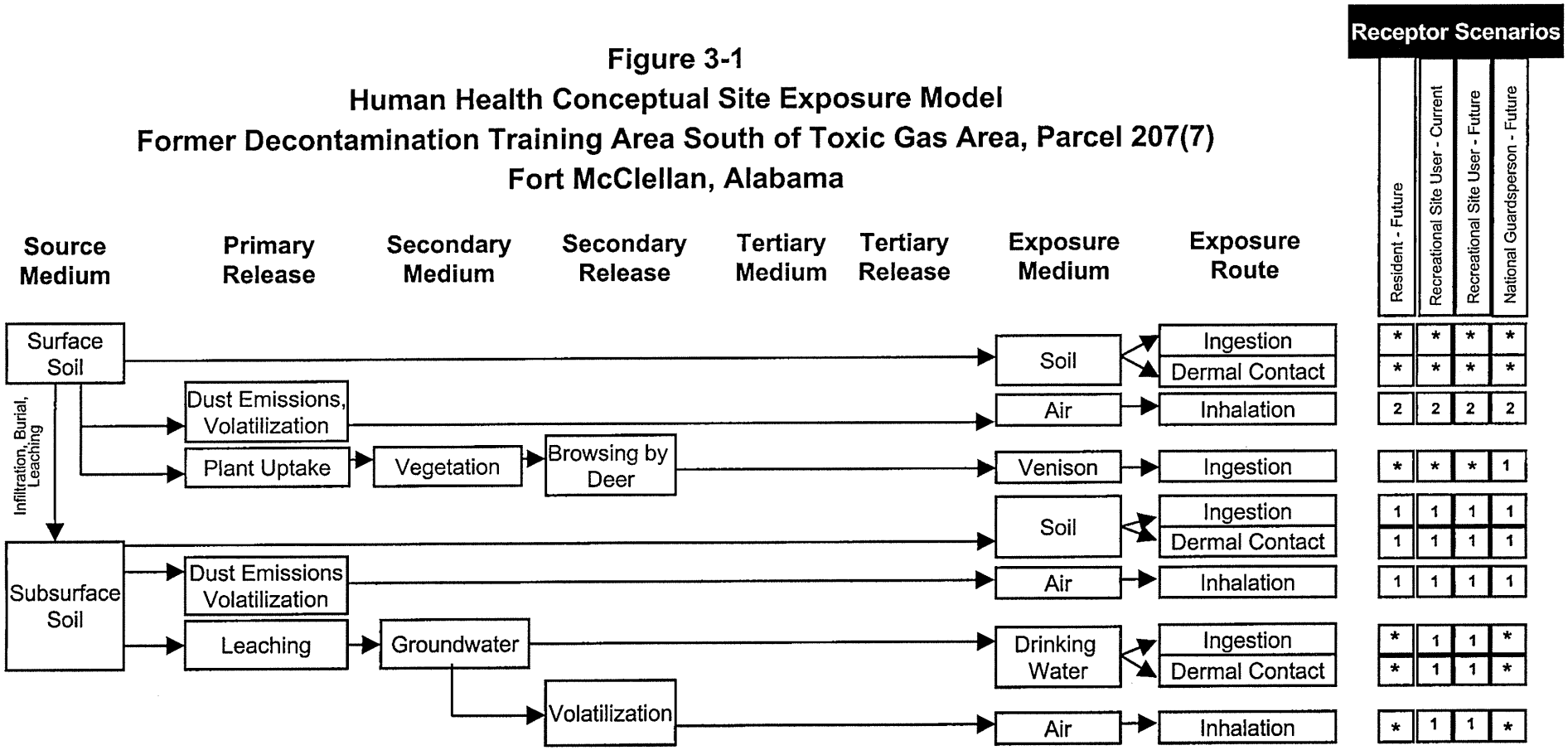
The seven-step decision-making process is presented in detail in Chapter 3.0 of the QAP and will be followed during the SI at Parcel 207(7). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at Parcel 207(7) will be based on using EPA definitive data to determine whether or not PSSCs are detected in site media. Results from these analyses will be compared with site-specific screening levels, ecological screening values, and background values to determine if PSSCs are present at the site at concentrations that pose an unacceptable risk to human health or the environment. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels (specific ecological assessment methods) will be addressed in accordance with the procedures in Section 5.3 of the installation-wide work plan (IT, 2002b).

Figure 3-1
Human Health Conceptual Site Exposure Model
Former Decontamination Training Area South of Toxic Gas Area, Parcel 207(7)
Fort McClellan, Alabama



* = Complete exposure pathway evaluated in the streamlined risk assessment.
1 = Incomplete exposure pathway.
2 = Although theoretically complete, this pathway is judged to be insignificant and is not evaluated in the streamlined risk assessment.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, and groundwater will be sampled and analyzed to meet the objectives of the SI at Parcel 207(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample matrices, as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 Methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard-copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 3.3 and presented in Chapter 5.0 of the QAP (IT, 2002a).

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The presence of UXO is possible at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), because it is located within Pelham Range, which is an active range. Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings. The site-specific UXO safety plan provides technical guidance for ordnance and explosives avoidance for sample collection activities. The site-specific UXO safety plan attachment has been written in conjunction with Appendix E of the SAP (IT, 2002a).

4.1.1 Surface UXO Survey

A UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. Subsurface metallic anomalies will not be disturbed but will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Appendix E of the approved SAP (IT, 2002a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, downhole UXO surveys will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Appendix E of the SAP (IT, 2002a), will continue until undisturbed soil is encountered or the borehole has been advanced to 12 feet bgs, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2 of the SAP (IT, 2002a). The site manager will mark the proposed locations with stakes, coordinate with the local utility companies to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), includes the collection of surface soil, subsurface soil, and groundwater samples for chemical analysis. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted. Additionally, samples will be collected from environmental media in locations that will assist in the assessment of potential ecological impacts resulting from activities at the site.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from 5 locations at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7).

4.2.1.1 Sample Locations and Rationale

The sampling rationale for each surface soil sample location is listed in Table 4-1. Proposed sampling locations are shown in Figure 4-1. Surface soil sample designations and QA/QC sample requirements are summarized in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field conditions.

4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push methodology as specified in Section 5.1.1.1 of the SAP (IT, 2002a). In areas where site access does not permit the use of a direct-push rig, the samples will collected using a stainless steel hand auger as specified in Section 5.1.1.2 and Section 6.1.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 6.8.3 of the SAP. Surface soil samples will be screened for information purposes only, not to aid in the selection of samples for analysis. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are discussed in Chapter 4.0 and listed in Table 4-1 of the QAP. Sample documentation and chain-of-custody (COC) will be recorded as specified in Chapter 6.0 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

Sampling Locations and Rationale
Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7)
Fort McClellan, Alabama

Sample Location	Sample Media	Sample Location Rationale
DTA-207-GP01	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed in the northwestern portion of the parcel. Sample data will indicate if contaminant releases into the environment have occurred from former activities at this area of the location and if contaminated soil exists at this location. Soil sample data will also be used to assess potential impacts to terrestrial biota that might utilize the location for food and/or habitat purposes.
DTA-207-GP02	Surface soil and subsurface soil	Soil boring for surface soil and subsurface soil samples to be placed in the southeastern portion of the parcel. Sample data will indicate if contaminant releases into the environment have occurred from former activities at this area of the location and if contaminated soil exists at this location. Soil sample data will also be used to assess potential impacts to terrestrial biota that might utilize the location for food and/or habitat purposes.
DTA-207-MW01	Surface soil, subsurface soil, and groundwater	Soil boring surface soil, subsurface soil, and groundwater samples to be placed in the northeastern corner of the parcel. Sample data will indicate if contaminant releases into the environment have occurred from former activities at this area of the location and if contaminated soil exists at this location. Soil sample data will also be used to assess potential impacts to terrestrial biota that might utilize the location for food and/or habitat purposes. The monitoring well location will be used to establish a local groundwater flow direction and location-specific geology, and provide information on groundwater quality in the residuum aquifer.
DTA-207-MW02	Surface soil subsurface soil and groundwater	Soil boring surface soil, subsurface soil, and groundwater samples to be placed in the central area of the parcel. Sample data will indicate if contaminant releases into the environment have occurred from former activities at this area of the location and if contaminated soil exists at this location. Soil sample data will also be used to assess potential impacts to terrestrial biota that might utilize the location for food and/or habitat purposes. The monitoring well location will be used to establish a local groundwater flow direction and location-specific geology, and provide information on groundwater quality in the residuum aquifer.
DTA-207-MW03	Surface soil subsurface soil and groundwater	Soil boring surface soil, subsurface soil, and groundwater samples to be placed in the southwestern corner of the parcel. Sample data will indicate if contaminant releases into the environment have occurred from former activities at this area of the location and if contaminated soil exists at this location. Soil sample data will also be used to assess potential impacts to terrestrial biota that might utilize the location for food and/or habitat purposes. The monitoring well location will be used to establish a local groundwater flow direction and location-specific geology, and provide information on groundwater quality in the residuum aquifer.

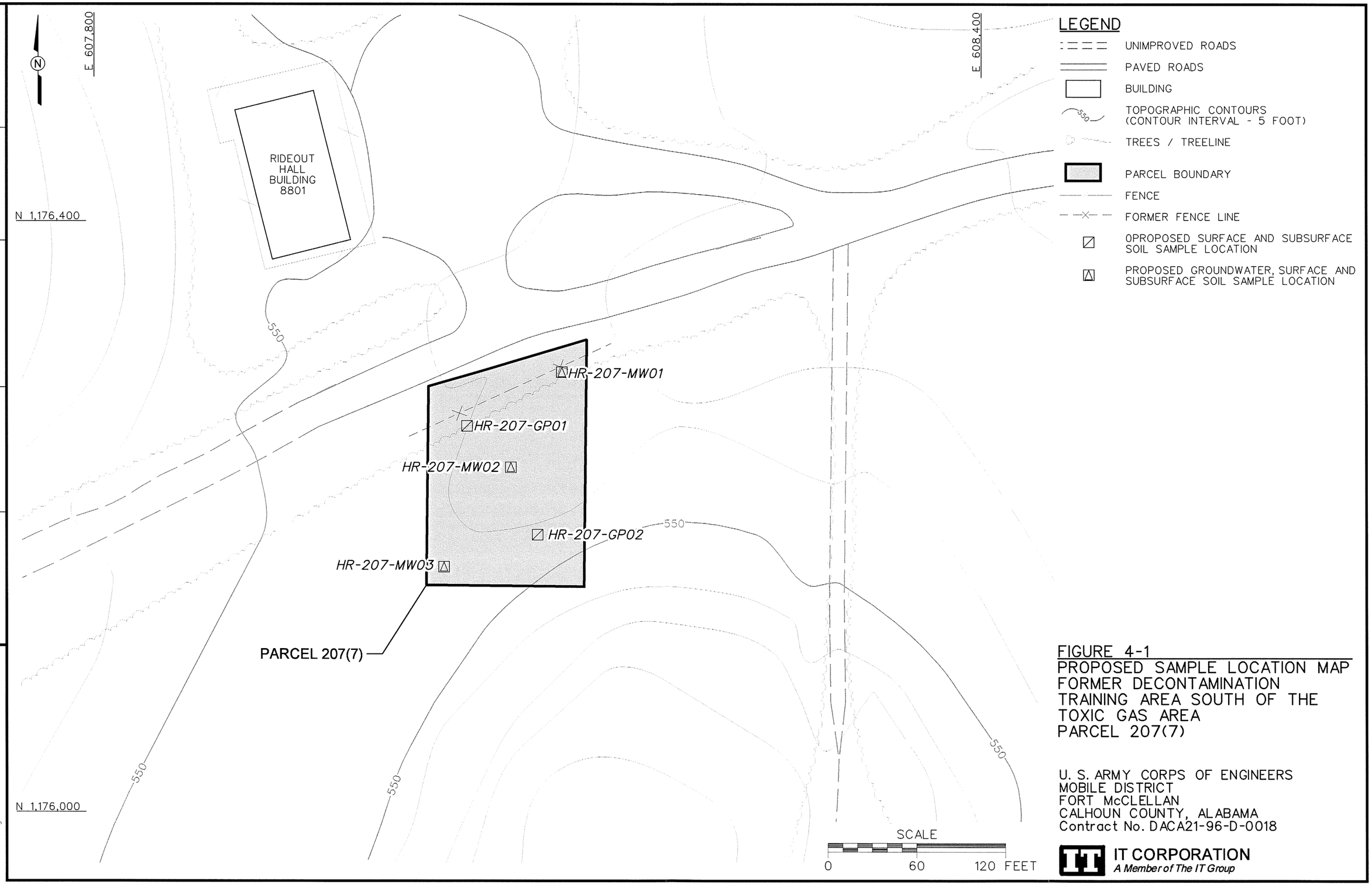


FIGURE 4-1
PROPOSED SAMPLE LOCATION MAP
FORMER DECONTAMINATION
TRAINING AREA SOUTH OF THE
TOXIC GAS AREA
PARCEL 207(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT CORPORATION
A Member of The IT Group

DRAWN BY: D. BOWAR | STARTING DATE: 03/29/01 | DATE LAST REV.:
DRAWN BY: J. YACOUB | INITIATOR: L. O'HARE | DWG. NO.: ...\774645es.741
PROJ. MGR.: S. MORAN | ENGR. CHCK. BY: | DRAFT. CHCK. BY: | PROJ. NO.: 774645
06/11/02 10:08:06 AM
DBILLNG c:\cadd\design\774645es.741

Table 4-2

Surface Soil and Subsurface Soil Sample Designations and QA/QC Sample Quantities, Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7) Fort McClellan, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
DTA-207-GP01	DTA-207-GP01-SS-MN0001-REG	0-1				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs,
	DTA-207-GP01-DS-MN0002-REG	a			DTA-207-GP01-DS-MN0002-MS/MSD	
DTA-207-GP02	DTA-207-GP02-SS-MN0003-REG	0-1				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs,
	DTA-207-GP02-DS-MN0004-REG	a				
DTA-207-MW01	DTA-207-MW01-SS-MN0005-REG	0-1				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs,
	DTA-207-MW01-DS-MN0006-REG	a				
DTA-207-MW02	DTA-207-MW02-SS-MN0007-REG	0-1				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs,
	DTA-207-MW02-DS-MN0008-REG	a	DTA-207-MW02-DS-MN0009-FD			
DTA-207-MW03	DTA-207-MW03-SS-MN0010-REG	0-1				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs,
	DTA-207-MW03-DS-MN0011-REG	a				

[a] Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from 5 borings installed at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7).

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The sampling rationale for each subsurface soil sample location is listed in Table 4-1. Sample designations and QA/QC sample requirements are listed in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field observations and utility clearance results.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Section 5.1.1.1 and Section 6.1.1.1 of the SAP (IT, 2002a). In areas where site access does not permit the use of a direct-push rig, the samples will be collected using a hand auger, as specified in Sections 5.1.1.2 and 6.1.1.1 of the SAP.

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is met. A detailed lithogical log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analysis. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 6.8.3 of the SAP to measure samples exhibiting elevated readings exceeding background (readings in ambient air). Typically, the subsurface soil sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples indicates a reading exceeding background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analysis. Subsurface soil samples may be selected for analysis from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analysis. More than one subsurface soil sample may be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and COC will be recorded as specified in Chapter 6.0 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in

this SFSP are discussed in Chapter 4.0 and listed in Table 4-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Permanent Monitoring Wells

Three permanent monitoring wells will be installed at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7). The permanent monitoring well locations are shown on Figure 4-1. The rationale for each monitoring well location is presented in Table 4-1. Monitoring wells will be installed using a truck-mounted hollow-stem auger drill rig. The monitoring well boreholes will be drilled to the top of bedrock, or until adequate groundwater is encountered to install a well with 10 to 20 feet of screen.

The monitoring well casing will consist of new 2-inch inside-diameter (ID), Schedule 40, threaded, flush-joint polyvinyl chloride (PVC) pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap PVC well screen, approximately 10 to 20 feet long. At the discretion of the IT site manager, a sump (composed of new, 2-inch ID, Schedule 40, threaded, flush-joint PVC) may be attached to the bottom of the well screen. After the casing and screen materials are lowered into the boring, a filter pack will be installed around the well screen. In wells installed to depths of 20 feet or less, the filter pack material will be gravity filled. In wells installed to depths of 20 feet or more, the filter pack will be tremied into place. The filter pack will be installed from the bottom of the well to approximately five feet above the top of the well screen. The filter pack will consist of 20/40 (Number 1) silica sand. A fine sand (30/70 silica sand), approximately five feet thick, may be placed above the filter pack. A bentonite seal, approximately five feet thick, will be placed above the filter pack (or fine sand, if used). The remaining annular space will be grouted with a bentonite-cement mixture, using approximately 7 to 8 gallons of water and approximately 5 pounds of bentonite per 94-pound bag of Type I or Type II Portland cement. The grout will be tremied into place from the top of the bentonite seal to ground surface. Monitoring wells will be completed with stick-up or flush-mount construction as determined by the project geologist.

Soil samples for lithology will be collected starting at five feet bgs, and at five-foot intervals thereafter, to the total depth of the borehole. Lithologic samples will be collected and described to provide a detailed lithologic log. The samples will be collected using a 24-inch-long, 2-inch-or-larger-diameter split-spoon sampler. The soil borings will be logged in accordance with American Standard for Testing and Materials Method D 2488 using the Unified Soil Classification System. The soil samples will be screened in the field for the presence of volatile

organic compound contamination using a PID. The monitoring wells will be drilled, installed, and developed as specified in Section 5.1 and Appendix C of the SAP (IT, 2002a). The exact monitoring well locations will be determined in the field by the on-site geologist, based on actual field conditions. Monitoring wells will be allowed to equilibrate for 14 days after well development prior to collecting groundwater samples.

4.2.4 Groundwater Sampling

Groundwater samples will be collected from the three monitoring wells completed at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), as presented in Section 4.2.3.

4.2.4.1 Sample Locations and Rationale

Groundwater samples will be collected from the monitoring well locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-3.

4.2.4.2 Sample Collection

Prior to sampling monitoring wells, static water level will be measured from each of the monitoring wells installed at the site to define the groundwater flow in the residuum aquifer. Water level measurements will be performed as outlined in Section 5.5 of the SAP (IT, 2002a). Groundwater samples will be collected in accordance with the procedures outlined in Section 6.1.1.5 and Attachment 5 of the SAP. Low-flow groundwater sampling methodology outlined in Attachment 5 of the SAP may be used as deemed necessary by the IT site manager.

Sample documentation and COC will be recorded as specified in Chapter 6.0 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are discussed in Chapter 4.0 and listed in Table 4-1 of the QAP (IT, 2002a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and non-sampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 6.5.1.1 of the SAP (IT, 2002a). Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 6.5.1.2 of the SAP.

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7)
Fort McClellan, Alabama

Sample Location	Sample Designation	Sample Matrix [a]	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
DTA-207-MW01	DTA-207-MW01-GW-MN3001-REG	Groundwater			DTA-207-MW01-GW-MN3001-MS/MSD	TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs
DTA-207-MW02	DTA-207-MW02-GW-MN3002-REG	Groundwater	DTA-207-MW02-GW-MN3003-FD			TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs
DTA-207-MW03	DTA-207-MW03-GW-MN3004-REG	Groundwater				TAL Metals, Nitroaromatic/Nitramine Explosives TCL VOCs, TCL SVOCs

[a] Groundwater samples will be collected from the approximate top 5 to 10 feet of the water column per Attachment 5 of the SAP (IT, 2002a)

FD - Field duplicate.
FS - Field split.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum of 1983. Elevations will be referenced to the North American Vertical Datum of 1988.

Horizontal coordinates for soil sample locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use permanent monitoring wells to determine water levels, a higher level of accuracy is required. Monitoring wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.4.1.1 of the SAP. Conventional land survey requirements are presented in Section 4.4.1.2 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in this chapter of this SFSP will be analyzed for a specific suite of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), consist of the following list of analytical suites:

- Target analyte metals - Method 6010B/7000
- Nitroaromatic/nitramine explosives – Method 8330
- Target compound list volatile organic compounds - Method 5035/8260B
- Target compound list semivolatile organic compounds - Method 8270C

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Chapter 5.0 in the QAP. Data will be reported in accordance with definitive data requirements of Chapter 2 of the USACE Engineering Manual 200-1-6, *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects* (USACE, 1997), and evaluated by the stipulated requirements for the generation of definitive data (Section 7.2.2 of the QAP). Chemical data will be reported by the laboratory via hard-copy data packages using Contract Laboratory Program-like forms, along

Table 4-4

Analytical Samples
Site Investigation
Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples: No. of Sample Points	Field Samples: No. of Events	Field Samples: No. of Field Samples	QA/QC Samples[a]: Field Dups (10%)	QA/QC Samples[a]: MS/MSD (5%)	QA/QC Samples[a]: Trip Blank (1/ship)	QA/QC Samples[a]: Eq. Rinse (1/wk/matrix)	EMAX: Total No. Analysis
Parcel 207(7): 3 water matrix samples (3 groundwater samples); **10 soil matrix samples** (5 surface soil samples and 5 subsurface soil samples)											
All samples will be analyzed for the following parameters:											
TAL Metals	6010B/7000	water	normal	3	1	3	1	1		1	7
Nitroaromatic/Nitramine Explosives	8330	water	normal	3	1	3	1	1		1	7
TCL VOCs	5035/8260B	water	normal	3	1	3	1	1	1	1	8
TCL SVOCs	8270C	water	normal	3	1	3	1	1		1	7
								1			
TAL Metals	6010B/7000	soil	normal	10	1	10	1	1		1	14
Nitroaromatic/Nitramine Explosives	8330	soil	normal	10	1	10	1	1		1	14
TCL VOCs	5035/8260B	soil	normal	10	1	10	1	1		1	14
TCL SVOCs	8270C	soil	normal	10	1	10	1	1		1	14
					Parcel 207(7):	52	8	9	1	8	85

[a]Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.
Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.

Ship samples to:

EMAX Laboratories, Inc
1835 205th Street
Torrance, CA 90501
Attn: Elizabeth McIntyre
Tel: 310-618-8889
Fax: 310-618-0818

with electronic copies. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Sections 6.1.3 through 6.1.7 of the SAP (IT, 2002a). Completed analysis request/COC records will be secured and included with each shipment of coolers to:

Attn: Sample Receiving/Elizabeth McIntyre
EMAX Laboratories, Inc.
1835 205th Street
Torrance, California 90501
Telephone: (310) 618-8889.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements described in Appendix D of the SAP (IT, 2002a). The IDW expected to be generated at the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7), will include decontamination fluids, drill cuttings, purge water, and disposable personal protective equipment. Sampling of the IDW to obtain analytical results for characterizing the waste for disposal will follow procedures specified in Section 6.1.1.8 of the SAP.

4.8 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for the Former Decontamination Training Area South of the Toxic Gas Area, Parcel 207(7). The SSHP attachment will be used in conjunction with the installation-wide safety and health plan.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Team.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 2002a, ***Draft Revision 3, Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, February.

IT Corporation (IT), 2002b, ***Draft Revision 2, Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, February.

Parsons Engineering Science, Inc. (Parsons), 2002, ***Draft Site Investigation Report for Pelham Range Sites; Lima Pond, Old Water Hole, and Former Decontamination Training Area South of the Toxic Gas Area,*** May

Parsons Engineering Science, Inc. (Parsons), 2001, ***Draft Final Amendment 01 to Final Work Plan/Site Safety Submission CWM EE/CA, Fort McClellan, Alabama for Pelham Range Site Investigation (Lima Pond, Old Water Hole, and Former Decontamination Area South of Toxic Gas Area)***, December.

U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM), 1999, ***Draft Preliminary Assessment No. 38-EH-1775-99, Fort McClellan Army National Guard Training Center, Fort McClellan, Alabama***, May 28 – June 17.

U.S. Army Corps of Engineers (USACE), 2000, ***Statement of Work for Task Order CK05, Modification No. 10, National Guard Memorandum of Agreement Sites, Fuel/Training Areas SI, Waste Chemical Storage Area SI, Fire Training Pit SI, Industrial Landfill Remedial Design, UST Review, Range J RI, and Partnering Facilities at Fort McClellan, Alabama***, September.

U.S. Army Corps of Engineers (USACE), 1997, ***Chemical Quality Assurance for HTRW Projects***, Engineer Manual EM 200-1-6, October 10.

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 2000, ***Guidance for the Data Quality Objectives Process, EPA 600/R-96/005***, August.

ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
2,4,5-TP	silvex
3D	3D International Environmental Group
AB	ambient blank
AbB3	Anniston gravelly clay loam, 2 to 6 percent slopes, severely eroded
AbC3	Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded
AbD3	Anniston and Allen gravelly clay loams, 10 to 15 percent slopes, eroded
Abs	skin absorption
ABS	dermal absorption factor
AC	hydrogen cyanide
ACAD	AutoCadd
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded
ACGIH	American Conference of Governmental Industrial Hygienists
AdE	Anniston and Allen stony loam, 10 to 25 percent slope
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEC	U.S. Army Environmental Center
AEL	airborne exposure limit
AET	adverse effect threshold
AF	soil-to-skin adherence factor
AHA	ammunition holding area
AL	Alabama
ALAD	-aminolevulinic acid dehydratase
amb.	Amber
amsl	above mean sea level
ANAD	Anniston Army Depot
AOC	area of concern
APEC	areas of potential ecological concern
APT	armor-piercing tracer
AR	analysis request
ARAR	applicable or relevant and appropriate requirement
AREE	area requiring environmental evaluation
ASP	Ammunition Supply Point
ASR	Archives Search Report
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AWARE	Associated Water and Air Resources Engineers, Inc.
AWWSB	Anniston Water Works and Sewer Board
'B'	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)
BCF	blank correction factor; bioconcentration factor
BCT	BRAC Cleanup Team
BERA	baseline ecological risk assessment
BEHP	bis(2-ethylhexyl)phthalate
BFB	bromofluorobenzene
BFE	base flood elevation
BG	Bacillus globigii
bgs	below ground surface
BHC	betahexachlorocyclohexane
BHHRA	baseline human health risk assessment
BIRTC	Branch Immaterial Replacement Training Center
bkg	background
bls	below land surface
BOD	biological oxygen demand
Bp	soil-to-plant biotransfer factors
BRAC	Base Realignment and Closure
Braun	Braun Intertec Corporation
BSAF	biota-to-sediment accumulation factors
BSC	background screening criterion
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethyl benzene, and xylenes
BTOC	below top of casing
BTV	background threshold value
BW	biological warfare; body weight
BZ	breathing zone; 3-quinuclidinyl benzilate
C	ceiling limit value
Ca	carcinogen
CAB	chemical warfare agent breakdown products
CAMU	corrective action management unit
CBR	chemical, biological and radiological
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CD	compact disc
CDTF	Chemical Defense Training Facility
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CF	conversion factor
CFC	chlorofluorocarbon
CFDP	Center for Domestic Preparedness
CFR	Code of Federal Regulations
CG	carbonyl chloride (phosgene)
CGI	combustible gas indicator
ch	inorganic clays of high plasticity
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CK	cyanogen chloride
cl	inorganic clays of low to medium plasticity
Cl	chlorinated
CLP	Contract Laboratory Program
cm	centimeter
CN	chloroacetophenone
CNB	chloroacetophenone, benzene, and carbon tetrachloride
CNS	chloroacetophenone, chloropicrin, and chloroform
CO	carbon monoxide
Co-60	cobalt-60
CoA	Code of Alabama
COC	chain of custody; contaminant of concern
COE	Corps of Engineers
Con	skin or eye contact
COPC	chemical(s) of potential concern
COPEC	chemical(s) of potential ecological concern
CPSS	chemicals present in site samples
CQCSM	Contract Quality Control System Manager
CRDL	contract-required detection limit
CRL	certified reporting limit
CRQL	contract-required quantitation limit
CRZ	contamination reduction zone
Cs-137	cesium-137
CS	ortho-chlorobenzylidene-malononitrile
CSEM	conceptual site exposure model
CSM	conceptual site model
CT	central tendency
ctr.	container
CWA	chemical warfare agent
CWM	chemical warfare material; clear, wide mouth
CX	dichloroformoxime
'D'	duplicate; dilution
D&I	detection and identification
DAAMS	depot area air monitoring system
DAF	dilution-attenuation factor
DANC	decontamination agent, non-corrosive
°C	degrees Celsius
°F	degrees Fahrenheit
DCA	dichloroethane
DCE	dichloroethene
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DEH	Directorate of Engineering and Housing
DEP	depositional soil
DFTPP	decafluorotriphenylphosphine
DI	deionized
DID	data item description
DIMP	di-isopropylmethylphosphonate
DM	dry matter

List of Abbreviations and Acronyms (Continued)

DMBA	dimethylbenz(a)anthracene
DMMP	dimethylmethylphosphonate
DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DP	direct-push
DPDO	Defense Property Disposal Office
DPT	direct-push technology
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DRO	diesel range organics
DS	deep (subsurface) soil
DS2	Decontamination Solution Number 2
DWEL	drinking water equivalent level
E&E	Ecology and Environment, Inc.
EB	equipment blank
EBS	environmental baseline survey
EC_{50}	effects concentration for 50 percent of a population
ECBC	Edgewood Chemical/Biological Command
ED	exposure duration
EDD	electronic data deliverable
EF	exposure frequency
EDQL	ecological data quality level
EE/CA	engineering evaluation and cost analysis
Elev.	elevation
EM	electromagnetic
EMI	Environmental Management Inc.
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
EOD	explosive ordnance disposal
EODT	explosive ordnance disposal team
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPIC	Environmental Photographic Interpretation Center
EPRI	Electrical Power Research Institute
ER	equipment rinsate
ERA	ecological risk assessment
ER-L	effects range-low
ER-M	effects range-medium
ESE	Environmental Science and Engineering, Inc.
ESMP	Endangered Species Management Plan
ESN	Environmental Services Network, Inc.
ESV	ecological screening value
ET	exposure time
EU	exposure unit
Exp.	explosives
E-W	east to west
EZ	exclusion zone
FAR	Federal Acquisition Regulations
FB	field blank
FD	field duplicate
FDA	U.S. Food and Drug Administration
FedEx	Federal Express, Inc.
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FFE	field flame expedient
FFS	focused feasibility study
FI	fraction of exposure
Fil	filtered
Flt	filtered
FMDC	Fort McClellan Development Commission
FML	flexible membrane liner
FMP 1300	Former Motor Pool 1300
FOMRA	Former Ordnance Motor Repair Area
Foster Wheeler	Foster Wheeler Environmental Corporation
Frtn	fraction
FS	field split; feasibility study
FSP	field sampling plan
ft	feet
ft/ft	feet per foot
FTA	Fire Training Area
FTMC	Fort McClellan
FTRRA	FTMC Reuse & Redevelopment Authority
g	gram
g/m^3	gram per cubic meter
G-856	Geometrics, Inc. G-856 magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
GAF	gastrointestinal absorption factor
gal	gallon
gal/min	gallons per minute
GB	sarin
gc	clay gravels; gravel-sand-clay mixtures
GC	gas chromatograph
GCL	geosynthetic clay liner
GC/MS	gas chromatograph/mass spectrometer
GCR	geosynthetic clay liner
GFAA	graphite furnace atomic absorption
GIS	Geographic Information System
gm	silty gravels; gravel-sand-silt mixtures
gp	poorly graded gravels; gravel-sand mixtures
gpm	gallons per minute
GPR	ground-penetrating radar
GPS	global positioning system
GS	ground scar
GSA	General Services Administration; Geologic Survey of Alabama
GSBP	Ground Scar Boiler Plant
GSSI	Geophysical Survey Systems, Inc.
GST	ground stain
GW	groundwater
gw	well-graded gravels; gravel-sand mixtures
HA	hand auger
HCl	hydrochloric acid
HD	distilled mustard
HDPE	high-density polyethylene
HEAST	Health Effects Assessment Summary Tables
Herb.	herbicides
HHRA	human health risk assessment
HI	hazard index
HPLC	high performance liquid chromatography
HNO_3	nitric acid
HQ	hazard quotient
HQ_{screen}	screening-level hazard quotient
hr	hour
H&S	health and safety
HSA	hollow-stem auger
HTRW	hazardous, toxic, and radioactive waste
'I'	out of control, data rejected due to low recovery
IATA	International Air Transport Authority
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively-coupled plasma
ICRP	International Commission on Radiological Protection
ICS	interference check sample
ID	inside diameter
IDL	instrument detection limit
IDLH	immediately dangerous to life or health
IDM	investigative-derived media
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic
IF	ingestion factor; inhalation factor
ILCR	incremental lifetime cancer risk
IMPA	isopropylmethyl phosphonic acid
IMR	Iron Mountain Road
in.	inch
Ing	ingestion
Inh	inhalation
IP	ionization potential
IPS	International Pipe Standard
IR	ingestion rate
IRDMIS	Installation Restoration Data Management Information System
IRIS	Integrated Risk Information Service
IRP	Installation Restoration Program
IS	internal standard
ISCP	Installation Spill Contingency Plan

List of Abbreviations and Acronyms (Continued)

IT	IT Corporation
ITEMS	IT Environmental Management System™
'J'	estimated concentration
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes
JPA	Joint Powers Authority
K	conductivity
K_{ow}	octonal-water partition coefficient
L	lewisite; liter
l	liter
LBP	lead-based paint
LC	liquid chromatography
LCS	laboratory control sample
LC_{50}	lethal concentration for 50 percent population tested
LD_{50}	lethal dose for 50 percent population tested
LEL	lower explosive limit
LOAEL	lowest-observed-advserse-effects-level
LT	less than the certified reporting limit
LUC	land-use control
LUCAP	land-use control assurance plan
LUCIP	land-use control implementation plan
max	maximum
MB	method blank
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MCPA	4-chloro-2-methylphenoxyacetic acid
MCS	media cleanup standard
MD	matrix duplicate
MDC	maximum detected concentration
MDCC	maximum detected constituent concentration
MDL	method detection limit
mg	milligrams
mg/kg	milligrams per kilogram
mg/kg/day	milligram per kilogram per day
mg/kgbw/day	milligrams per kilogram of body weight per day
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils
MHz	megahertz
µg/g	micrograms per gram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
min	minimum
MINICAMS	miniature continuous air monitoring system
ml	inorganic silts and very fine sands
mL	milliliter
mm	millimeter
MM	mounded material
MMBtu/hr	million Btu per hour
MOGAS	motor vehicle gasoline
MP	Military Police
MPA	methyl phosphonic acid
MPM	most probable munition
MQL	method quantitation limit
MR	molasses residue
MRL	method reporting limit
MS	matrix spike
mS/cm	millisiemens per centimeter
mS/m	millisiemens per meter
MSD	matrix spike duplicate
MTBE	methyl tertiary butyl ether
msl	mean sea level
MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes , severely eroded
mV	millivolts
MW	monitoring well
MWI&P	Monitoring Well Installation and Management Plan
Na	sodium
NA	not applicable; not available
NAD	North American Datum
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NAS	National Academy of Sciences
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NE	no evidence; northeast
ne	not evaluated
NEW	net explosive weight
NFA	No Further Action
NG	National Guard
NGP	National Guardsperson
ng/L	nanograms per liter
NGVD	National Geodetic Vertical Datum
Ni	nickel
NIC	notice of intended change
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLM	National Library of Medicine
NPDES	National Pollutant Discharge Elimination System
NPW	net present worth
No.	number
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no-observed-adverse-effects-level
NR	not requested; not recorded; no risk
NRC	National Research Council
NRCC	National Research Council of Canada
NRHP	National Register of Historic Places
ns	nanosecond
N-S	north to south
NS	not surveyed
NSA	New South Associates, Inc.
nT	nanotesla
nT/m	nanoteslas per meter
NTU	nephelometric turbidity unit
nv	not validated
O_2	oxygen
O&G	oil and grease
O&M	operation and maintenance
OB/OD	open burning/open detonation
OD	outside diameter
OE	ordnance and explosives
oh	organic clays of medium to high plasticity
ol	organic silts and organic silty clays of low plasticity
OP	organophosphorus
ORP	oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector
OWS	oil/water separator
oz	ounce
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
Parsons	Parsons Engineering Science, Inc.
Pb	lead
PBMS	performance-based measurement system
PC	permeability coefficient
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
PCE	perchloroethene
PCP	pentachlorophenol
PDS	Personnel Decontamination Station
PEF	particulate emission factor
PEL	permissible exposure limit
PES	potential explosive site
Pest.	pesticides
PETN	pentarey thritol tetranitrate
PFT	portable flamethrower
PG	professional geologist

List of Abbreviations and Acronyms (Continued)

PID	photoionization detector
PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes
PM	project manager
POC	point of contact
POL	petroleum, oils, and lubricants
POW	prisoner of war
PP	peristaltic pump; Proposed Plan
ppb	parts per billion
PPE	personal protective equipment
ppm	parts per million
PPMP	Print Plant Motor Pool
ppt	parts per thousand
PR	potential risk
PRA	preliminary risk assessment
PRG	preliminary remediation goal
PSSC	potential site-specific chemical
pt	peat or other highly organic silts
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAM	quality assurance manual
QAO	quality assurance officer
QAP	installation-wide quality assurance plan
QC	quality control
QST	QST Environmental, Inc.
qty	quantity
Qual	qualifier
'R'	rejected data; resample
R&A	relevant and appropriate
RA	remedial action
RAO	removal action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RDX	cyclonite
ReB3	Rarden silty clay loams
REG	regular field sample
REL	recommended exposure limit
RFA	request for analysis
RfC	reference concentration
RfD	reference dose
RGO	remedial goal option
RI	remedial investigation
RL	reporting limit
RME	reasonable maximum exposure
ROD	Record of Decision
RPD	relative percent difference
RRF	relative response factor
RSD	relative standard deviation
RTC	Recruiting Training Center
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	real-time kinematic
SA	exposed skin surface area
SAD	South Atlantic Division
SAE	Society of Automotive Engineers
SAIC	Science Applications International Corporation
SAP	installation-wide sampling and analysis plan
sc	clayey sands; sand-clay mixtures
Sch.	Schedule
SCM	site conceptual model
SD	sediment
SDG	sample delivery group
SDZ	safe distance zone; surface danger zone
SEMS	Southern Environmental Management & Specialties, Inc.
SF	cancer slope factor
SFSP	site-specific field sampling plan
SGF	standard grade fuels
SHP	installation-wide safety and health plan
SI	site investigation
SINA	Special Interest Natural Area
SL	standing liquid
SLERA	screening-level ecological risk assessment
sm	silty sands; sand-silt mixtures
SM	Serratia marcescens
SMDP	Scientific Management Decision Point
s/n	signal-to-noise ratio
SOP	standard operating procedure
SOPQAM	U.S. EPA's *Standard Operating Procedure/Quality Assurance Manual*
sp	poorly graded sands; gravelly sands
SP	submersible pump
SPCC	system performance calibration compound
SPCS	State Plane Coordinate System
SPM	sample planning module
SQRT	screening quick reference tables
Sr-90	strontium-90
SRA	streamlined human health risk assessment
SRM	standard reference material
Ss	stony rough land, sandstone series
SS	surface soil
SSC	site-specific chemical
SSHO	site safety and health officer
SSHP	site-specific safety and health plan
SSL	soil screening level
SSSL	site-specific screening level
SSSSL	site-specific soil screening level
STB	supertropical bleach
STC	source-term concentration
STD	standard deviation
STEL	short-term exposure limit
STL	Severn-Trent Laboratories
STOLS	Surface Towed Ordnance Locator System®
Std. units	standard units
SU	standard unit
SUXOS	senior UXO supervisor
SVOC	semivolatile organic compound
SW	surface water
SW-846	U.S. EPA's *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*
SWMU	solid waste management unit
SWPP	storm water pollution prevention plan
SZ	support zone
TAL	target analyte list
TAT	turn around time
TB	trip blank
TBC	to be considered
TCA	trichloroethane
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzofurans
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TDEC	Tennessee Department of Environment and Conservation
TDGCL	thiodiglycol
TDGCLA	thiodiglycol chloroacetic acid
TERC	Total Environmental Restoration Contract
THI	target hazard index
TIC	tentatively identified compound
TLV	threshold limit value
TN	Tennessee
TNT	trinitrotoluene
TOC	top of casing; total organic carbon
TPH	total petroleum hydrocarbons
TR	target cancer risk
TRADOC	U.S. Army Training and Doctrine Command
TRPH	total recoverable petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
TWA	time-weighted average
UCL	upper confidence limit
UCR	upper certified range
'U'	not detected above reporting limit
UF	uncertainty factor
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAEC	U.S. Army Environmental Center

USAEHA	U.S. Army Environmental Hygiene Agency
USACMLS	U.S. Army Chemical School
USAMPS	U.S. Army Military Police School
USATCES	U.S. Army Technical Center for Explosive Safety
USATEU	U.S. Army Technical Escort Unit
USATHAMA	U.S. Army Toxic and Hazardous Material Agency
USC	United States Code
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTL	upper tolerance level; upper tolerance limit
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Supervisor
UXOSO	UXO safety officer
V	vanadium
VOA	volatile organic analyte
VOC	volatile organic compound
VOH	volatile organic hydrocarbon
VQlfr	validation qualifier
VQual	validation qualifier
VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)
WAC	Women's Army Corps
Weston	Roy F. Weston, Inc.
WP	installation-wide work plan
WRS	Wilcoxon rank sum
WS	watershed
WSA	Watershed Screening Assessment
WWI	World War I
WWII	World War II
XRF	x-ray fluorescence
yd^3	cubic yards

SAIC – Data Qualifiers, Codes and Footnotes, 1995 Remedial Investigation

N/A – Not analyzed

ND – Not detected

Boolean Codes

- LT – Less than the certified reporting limit

Flagging Codes

- 9 – Non-demonstrated/validated method performed for USAEC
- B – Analyte found in the method blank or QC blank
- C – Analysis was confirmed
- D – Duplicate analysis
- I – Interfaces in sample make quantitation and/or identification to be suspicious
- J – Value is estimated
- K – Reported results are affected by interfaces or high background
- N – Tentatively identified compound (match greater than 70%)
- Q – Sample interference obscured peak of interest
- R – Non-target compound analyzed for but not detected (GC/MS methods)
- S – Non-target compound analyzed for and detected (GC/MS methods)
- T – Non-target compound analyzed for but not detected (non GC/MS methods)
- U – Analysis in unconfirmed
- Z – Non-target compound analyzed for and detected (non-GC/MS methods)

Qualifiers

- J – The low-spike recovery is low
- N – The high-spike recovery is low
- R – Data is rejected

ATTACHMENT 2

MEMORANDUM FOR RELEASE OF PROPERTY FOR PELHAM RANGE HTRW INVESTIGATION

DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF:

CEHNC-OE-DC

4 June 2002

MEMORANDUM FOR U. S. Army Corps of Engineers, ATTN: Mr. Ellis Pope (EN-GE), P. O. Box 2288, Mobile, Alabama 36628-0001

SUBJECT: Release of Property for Pelham Range HTRW Investigations

1. The CWM Site Investigation for Pelham Range has been completed and the results from all the soil samples have been received. All of the samples were clear of Chemical Warfare Material and Chemical Warfare Material by-products.

2. The HTRW investigations can be started on the Chemical Warfare Material Sites that were completed during this investigation using analomy avoidance and withdrawal if suspect chemical weapons are found.

3. If you have any questions, please call Mr. Dan Copeland at 256-895-1567.

FOR THE COMMANDER:

C. DAVID DOUTHAT, P.E., CSP
Director, Ordnance and
Explosives Directorate